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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,888	02/03/2004	Paul Martin Schulte	NTS 0102 PUS	1089

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EXAMINER

TALBOT, MICHAEL

ART UNIT	PAPER NUMBER
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3722

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/770,888

Applicant(s)

SCHULTE, PAUL MARTIN

Examiner

Michael W. Talbot

Art Unit

3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The objection to the specification has been withdrawn due to Applicant's amendment filed 17 October 2005.

Claim Objections

2. The objection to the claims has been withdrawn due to Applicant's amendment filed 17 October 2005.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6,9,10,13,14,16-24 and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Yeo '316. Yeo '316 shows in Figure 1 a rotary cutting tool (10 and col. 1, line 61 through col. 2, line 2) having a shank (12) for rotation in a first hand direction (15), a cylindrical body extending axially from shank having at least one first flute (28) with at least one first flute cutting edge (36) in a distal end (40) of the body, the body having at least one helical flute (16,18) formed therein at an angle relative to an axis of rotation that is greater than that of the at least one first flute (col. 2, lines 51-54 and col. 3, lines 10-13) and being formed in a second hand rotational direction opposite to the first hand directional rotation. Yeo '316 shows the at least one helical flute having at least one helical flute cutting edge (24,26) spaced radially apart from the at least one first flute cutting edge so that a leading portion of the cutting edges generally lie in a common radial plane. Yeo '316 shows the at least one first flute and first flute cutting edge being straight relative to the axis of rotation when the helix angle is approximately a 1 degree

Art Unit: 3722

helix (col. 3, lines 10-13) and therefore equivalent to that defined by the Applicant in the specification (page 8, lines 15-24).

Regarding claim 4, Yeo '316 shows a longitudinal direction between the at least first flute cutting edge and the at least one helical flute cutting edge being less than 10 percent. Again based upon the relationship chosen between the helix angles of the first flute and helical cutting edges, a 10 percent or less relationship can be achieved (col. 3, lines 10-13).

Regarding claims 6,9 and 10, Yeo '316 shows a cylindrical margin (20,22,42), a longitudinal margin (42) generally aligned with the at least first flute, and a helical margin (20,22) generally aligned with the at least one helical flute for providing bearing support to the tool within the hole.

Regarding claims 13,17 and 18, Yeo '316 shows at least one primary relief surface (46) and at least one secondary relief surface (48) extending therefrom and formed along the at least one first flute cutting edge, and at least one relief surface (32,34) formed along the at least one helical flute cutting edge.

Regarding claims 14 and 16, Yeo '316 shows the at least one first flute cutting edge comprising a leading edge (50) inclined in relation to a radial plane and an end cutting edge (52) formed at an intersection of the first flute cutting edge and the distal end of the body (col. 3, lines 3-8).

Regarding claims 19-24, Yeo '316 shows the at least one first flute comprising an array of first flutes (28, only 1 of 2 shown) and the at least one helical flute comprising an array of helical flutes (16,18) wherein the respective array has an angular spacing tolerance (as defined by the Applicant on page 9, lines 2-8) between sequential flutes that is equal to or less than four radial quadrants divided by twice the number of respective flutes in the array in order to vary the loads imparted on the workpiece and tool. The number for both the first flutes and helical flutes

Art Unit: 3722

is 2, therefore the angular spacing tolerance for each is equal to $(360 / (2*2)) = 360 / 4 = 90$ degrees which should be equal to or less than half the angular distance between respective flutes (180 degrees), which results in $(1/2) * 180 \text{ degrees} = 90 \text{ degrees}$.

5. Claims 1-10, 13 and 18-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Serwa 2002/0090273. Serwa 2002/0090273 shows in Figures 1-3 a rotary cutting tool (10 and page 1, paragraph [0002]) having a shank (18) for rotation in a first hand direction (A), a cylindrical body extending axially from shank having at least one first flute (24) with at least one first flute cutting edge (20) in a distal end (16) of the body, the body having at least one helical flute (26) formed therein at an angle relative to an axis of rotation that is greater than that of the at least one first flute (page 3, paragraph [0025]) and being formed in a second hand rotational direction opposite to the first hand directional rotation. Serwa 2002/0090273 shows the at least one helical flute having at least one helical flute cutting edge (22) spaced radially apart from the at least one first flute cutting edge so that a leading portion of the cutting edges generally lie in a common radial plane. Serwa 2002/0090273 shows the at least one first flute and first flute cutting edge being parallel or substantially parallel to the axis of rotation (page 3, paragraph [0025]) and therefore equivalent to that defined by the Applicant in the specification (page 8, lines 15-24).

Regarding claim 4, Serwa 2002/0090273 shows a longitudinal direction between the at least first flute cutting edge and the at least one helical flute cutting edge being less than 10 percent. Again based upon the relationship chosen between the helix angles of the first flute and helical cutting edges, a 10 percent or less relationship can be achieved (page 3, paragraph [0025]).

Regarding claims 6, 9 and 10, Serwa 2002/0090273 shows in Figures 2 and 3 a cylindrical margin (not indexed), a longitudinal margin (not indexed) generally aligned with the at

Art Unit: 3722

least first flute, and a helical margin (not indexed) generally aligned with the at least one helical flute for providing bearing support to the tool within the hole.

Regarding claims 7 and 8, Serwa 2002/0090273 shows in Figure 3 a negative rank angle for the first flute cutting edge (not indexed) and the helical flute cutting edge (not indexed).

Regarding claims 13 and 17, Serwa 2002/0090273 shows at least one primary relief surface (36) formed along the at least one first flute cutting edge, and at least one relief surface (34) formed along the at least one helical flute cutting edge.

Regarding claims 19-24, Serwa 2002/0090273 shows the at least one first flute comprising an array of first flutes (24,24) and the at least one helical flute comprising an array of helical flutes (26,26) wherein the respective array has an angular spacing tolerance (as defined by the Applicant on page 9, lines 2-8) between sequential flutes that is equal to or less than four radial quadrants divided by twice the number of respective flutes in the array in order to vary the loads imparted on the workpiece and tool. The number for both the first flutes and helical flutes is 2, therefore the angular spacing tolerance for each is equal to $(360 / (2*2)) = 360 / 4 = 90$ degrees which should be equal to or less than half the angular distance between respective flutes (180 degrees), which results in $(1/2) * 180 \text{ degrees} = 90 \text{ degrees}$.

Regarding claims 25 and 26, Serwa 2002/0090273 shows the number of first flutes can be any number desired , such as 3 or 5 flutes (page 4, paragraph [0033]).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3722

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Reynolds et al. '458. Yeo '316 lacks the presence of at least one gash to assist in the removal of debris from the at least one helical flute cutting edge. Reynolds et al. '458 shows in Figures 1 and 2 a primary gash face (8) and a secondary gash face (10) serving the purpose of debris removal (col. 2, lines 32-44) from the helical flutes (5) at the body distal end (9). In view of this teaching of Reynolds et al. '458, it would have been obvious to include one or more gash faces shown by Reynolds et al. '458 to the rotary tool of Yeo '316 to facilitate debris removal so the tool could be operated at higher speeds with reduced wear, resulting in extended tool life.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Magill et al. '712. Yeo '316 lacks the presence of a coolant channel for conveying coolant fluid to the cutting edges. Magill et al. '712 shows in Figure 5 a coolant passage (44) for conducting coolant to the cutting edges and the associated surface of the workpiece. In view of this teaching of Magill et al. '712, it would have been obvious to include a coolant passage shown by Magill et al. '712 to the rotary tool of Yeo '316 to provide cooling of the blades resulting in extended tool life.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo '316 in view of Miller '487. Yeo '316 lacks the presence of a pilot tip extending from the distal end. Miller '487 shows in Figure 1 a pilot tip (21) extending from the body distal end (18). In view of this teaching of Miller '487, it would have been obvious to include a pilot tip shown by Miller '487 to provide bearing support to the rotary tool within the hole being formed.

Response to Arguments

10. Applicant's arguments filed 17 October 2005 have been fully considered but they are not persuasive. Specifically, Applicant is arguing the relationship between a rotary cutting tool and a reamer. Yeo '316 relates the particular described invention (a rotary cutting tool) to rotary

Art Unit: 3722

cutting tools such as mills, drills and routers in col. 1, line 61 through col. 2, line 2 which all are capable of performing reamer-like functions, such as roughing and finishing holes free of burrs. Furthermore, a reamer is a specific type of drill. Serwa 2002/0090273 relates the particular described invention (a router bit) to other equivalent rotary cutting tools such as roughing and finishing tools on page 1, paragraph [0002]. Furthermore, a reamer is a specific type of finishing tool.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mr. Boyer D. Ashley, may be reached at 571-272-4502.

Art Unit: 3722

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 703-872-9306.

This practice may be used for filling papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account.

Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.



MWT
Examiner
8 January 2006



BOYER D. ASHLEY
SUPERVISORY PATENT EXAMINER